

5. (New) An apparatus in accordance with Claim 3, wherein the apparatus is a scanning probe tool tip.
6. (New) An apparatus in accordance with Claim 3, wherein the apparatus is a flat panel display pixel.
7. (New) An apparatus in accordance with Claim 3, wherein the apparatus is a field emission device.
8. (New) An apparatus in accordance with Claim 3, wherein the carbon nanotube is used as a molecular antenna.
9. ((New) An apparatus in accordance with Claim 3, wherein collection of the carbon nanotubes is a functional device.

REMARKS

This Application has been carefully reviewed in light of the Office Action mailed on January 30, 2006. At the time of the Office Action, Claims 1-3 were pending in this Application, of which Claims 1-3 were rejected. Claims 4-9 have been added and are now in this case. Applicant respectfully requests reconsideration and favorable action in this case.

I. Duty under 35 U.S.C. 156

Applicant is the sole inventor and the subject matter of the claims was commonly owned at the time of invention.

II. Rejection under 35 U.S.C. § 103(a) – Nakamoto in view of Moskovits

Claims 1-3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Number 6,097,138 granted to Nakamoto (hereinafter “Nakamoto”) in

view of U.S. Patent Number 6,129,901 granted to Moskovits (hereinafter “Moskovits”).

The Applicant respectfully disagrees. Claims 1-3 include two differentiating conditions:

- 1) each carbon nanotube is formed directly on a protrusion, and
- 2) each carbon nanotube is formed from a nanosize pore containing catalyst.

It is asserted in the office action that “Nakamoto ‘138 discloses a carbon nanotube produced on a protrusion (see Figure 12 and column 15, line 66 – column 16, line 5).

Nakamoto synthesizes the carbon nanotubes by arc-discharge, which does not appear to require a catalyst.” The Nakamoto reference does not disclose forming carbon nanotubes directly on a protrusion, instead Nakamoto discloses how to form carbon nanotubes that are first deposited in a recess substrate and are subsequently transferred from the recess substrate to a protrusion. Nakamoto states “After the resist layer 133 is removed, anisotropic etching is performed by using an aqueous 30-wt % KOH solution, thereby forming a recess 135 having a depth of 0.71 μ m in the Si single crystal substrate 131.” (**Col. 14, lines 22-25**) after which “Subsequently, carbon nanotubes 136 are arranged on the bottom of the recess 135 (FIG. 13C). … Subsequently, the suspension of this ethanol is supplied into the recess 135 and dried. Consequently, the carbon nanotubes 136 can be arranged on the bottom of the recess 135.” (**Col. 14, lines 37-47**) and “As another method of arranging the carbon nanotubes 136 on the bottom of the recess 135, it is also possible to form a graphite electrode near the substrate 131 and deposit carbon nanotubes on the bottom of the recess 135.” (**Col. 14, lines 52-56**) followed by “Subsequently, a conductive material layer 137 made of a conductive material such as W is deposited on the Si single-crystal substrate 131 so as to bury the recess 135. … During the formation of this conductive material layer 137, the conductive material layer 137 is not completely buried on the bottom on which a plurality of carbon nanotubes are placed. Therefore, after separation from the substrate 131, a state in which the carbon nanotubes partially protrude from the tip of a conductive projection can be obtained.” (**Col. 14, lines 62-67, and Col. 15, lines 1-7**), and finally “Additionally, the Si single-

crystal substrate 131 is etched away by an aqueous ethylenediamine-pyrocatechol-pyrazine solution (ethylenediamine:pyrocatechol:pyrazine:water = 75 cc:12 g:3 mg:10 cc). In this manner, the carbon nanotubes 136 (not shown) and a conductive projection 143 are exposed as shown in FIG. 13F.” (Col. 15, lines 24-30). Therefore, the Nakamoto reference does not disclose forming carbon nanotubes directly on a protrusion.

Therefore, the Nakamoto disclosure is distinct from our disclosure where carbon nanotubes are formed directly on a protrusion. Therefore, the Nakamoto reference in view of Moskovits does not disclose our invention as claimed.

In addition, “to add the pores of Moskovits into the protrusions of Nakamoto” is not relevant since the Nakamoto reference does not teach or imply that a substrate with pores would synthesize carbon nanotubes, and further, the Nakamoto reference does not teach or imply that a protrusion with pores would synthesize carbon nanotubes.

Accordingly, the Applicant respectfully submits that neither Nakamoto nor Moskovits teach or suggest each limitation of the invention as claimed and that Claims 1-3 are nonobvious over Nakamoto in view of Moskovits.

For at least the reasons discussed above, the Applicant respectfully requests the Examiner to withdraw the rejection and allow Claims 1-3, as well as new dependent Claims 4-9. To the extent that this rejection is maintained and based upon any personal knowledge of the Examiner, the Applicant respectfully requests an affidavit in accordance with 37 CFR 1.107.

III. Double Patenting

Claims 1-3 were rejected on the ground of non-statutory double patenting over Claim 1 of U.S. Patent Number 6,597,090. In accordance with the Examiner’s request, the Applicant hereby disclaims any “right to exclude” granted in this Application upon the expiration of U.S. Patent Number 6,597,090. A terminal disclaimer in compliance with CFR 1.321 is attached.

The Applicant respectfully request the Examiner to withdraw the rejection and allow Claims 1-3.

IV. New Claims

Claims 4-9 have been added and are now in this Application. Support for these new claims can be found in the Specification on Page 4, Line 28 through Page 5, Line 15, as well as other references in the Application. In addition, Claims 4-9 are dependent upon independent Claim 3 which is in condition for allowance. Accordingly, the Applicant respectfully requests the Examiner allow new Claims 4-9.

CONCLUSION

The Applicant has made and earnest attempt to place this case in condition for allowance. For the foregoing reasons, and for reasons clearly apparent, the Applicant respectfully requests full allowance of all pending claims.

If there are any matters that can be discussed by telephone to further the prosecution of this Application, the Applicant invites the Examiner to contact the undersigned at (512) 339-0608 at the Examiner's convenience.

The Applicant is a small entity and believes that an extension of time fee of \$510.00 and a terminal disclaimer fee of \$65.00 are due, for a total of \$575.00. The Applicant has enclosed an authorization for credit card payment of such fees.

Respectfully submitted,

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